

### III—OBSERVATIONS ON THE AMERICAN POGONINÆ, INCLUDING TRECHUS.

The Pogoninæ, as organized by LeConte and Horn, comprise but few genera, but these differ from each other very much in general habitus, as well as special structural characters, and the usual custom now is to restrict the Pogoninæ to *Pogonus* and a few related genera and subgenera, such as *Cardioderus*, *Syrdenus* and *Pogonistes* and to make of *Trechus*, *Anophthalmus*, *Patrobus* and some others a separate subfamily—the Trechinæ; but, as my material will not permit me to go deeply into the subject, I desire at the present time to give synopses of merely the four genera *Patrobus*, *Platidius*, *Trechus* and *Anatrechus*, as now represented in my collection.

#### **Patrobus** Steph.

The body in this genus is of moderate to rather small size, somewhat ventricose, with moderate head, prominent eyes and very slender palpi, the last joint of the maxillary always distinctly longer than the third. The prothorax is more or less cordiform, with very deep basal foveæ, which are irregularly rounded and always coarsely punctate and with a short fine carina near the lateral edge basally, the median stria deep, subentire and becoming coarser and deeper at base; the anterior transverse impression is punctate and usually deep, but in some species, such as *laviceps* and *insularis*, it becomes obsolete medially, leaving only a somewhat evident broad apical beading. The elytra have punctured striæ, the scutellar always long and parallel to the suture, the first stria gradually outwardly oblique at base, ending near the point of origin of the second stria. The subapical sinus is subobsolete, the base not margined, except by a slight incurvature of the lateral margin, and the submarginal line of ocellate punctures is feebly developed. The discal punctures are three in number, but in *rufipes*, LeConte mentions four—possibly however an abnormal condition. The legs and tarsi are slender, the male having the first two joints of the anterior tarsi very moderately dilated. The sterna are all coarsely punctured as

a rule, except medially. Excepting *longicornis* Say, the species occur only in very cold climates; those before me are in great part undescribed hitherto and may be known as follows:

- Frontal sulci long and deep, coarsely impressed . . . . . 2  
 Frontal sulci very short and feeble, almost obsolete . . . . . 4  
 2—Anterior transverse impression of the pronotum coarse, deep, groove-like and impunctate. Body larger, broader and more convex, polished; head three-fourths as wide as the prothorax, with very prominent eyes; last palpal joint two-fifths longer than the third; basal constriction scarcely punctate; prothorax nearly one-half wider than long, cordate, the sides evenly and moderately reflexed throughout the length, sinuate basally, the basal angles not rounded, the apical rather broadly; stria deep, coarsely sulciform at base; foveæ large, deep and cavernous, the carina feeble; elytra widest slightly behind the middle, the striæ coarse, very deep and strongly punctate, rapidly obsolete laterally; under surface piceous, the legs notably pale flavo-testaceous. Length (♂ ♀) 11.0–13.5 mm.; width 3.9–4.8 mm. Rhode Island to North Carolina (Asheville) and northward to Duluth. Abundant. [*Feronia longicornis* Say; *P. americanus* Dej.]

**longicornis** Say

- Anterior impression coarsely and diffusely punctate; body much smaller and narrower, the elytral striæ finer and less impressed, the legs darker . . . . . 3  
 3—Color black, the elytra obscure rufous, darker basally; under surface rufous, blackish anteriorly, the legs dark rufous, the femora sometimes darker; elytra less shining in the female; head four-fifths as wide as the prothorax, with very prominent eyes and small rounded mandibles; basal constriction diffusely punctate; antennæ dark rufous, sometimes piceous basally, rather long and slender, fully half as long as the body in the male; prothorax a third (♂) to one-half (♀) wider than long, widest two-fifths from the apex, the sides rounded, becoming strongly sinuate, then parallel, basally, the angles sharp but not prominent, the margins well reflexed, more narrowly toward apex; anterior impression shallow but with numerous coarse diffused punctures, the stria coarsely sulciform at base; foveæ deep, coarsely punctate, bistriate, the carina sharply marked; elytra oblong-sub-oval, widest behind the middle, two-thirds longer than wide and nearly one-half wider than the prothorax; apex gradually rounded; sides but just visibly arcuate, rapidly rounding for a short distance at the humeri; striæ rather fine, but slightly impressed suturally and distinctly punctured except apically, where they become gradually very fine, the seventh fine but distinct, the eighth moderately coarse; third interval with three punctures. Length (♂ ♀) 9.5–10.5 mm.; width 2.8–3.3 mm. Labrador (W. St. Modest),—Sherman. Two examples . . . . . **labradorinus** n. sp.

Color black, slightly rufescent posteriorly beneath, the legs dark rufous; body smaller and narrower than in the preceding, the head similar but with smaller and scarcely so prominent eyes and with the man-

dibles more expanded beneath basally; antennæ slightly shorter and thicker; prothorax narrower, less than a third wider than long, the sides less strongly rounded anteriorly and rather less sinuate basally, more broadly and equally reflexed throughout the length, otherwise nearly as in *labradorinus*, the median stria similarly coarsely sulciform basally; elytra not quite so elongate, otherwise nearly as in the preceding, though not so noticeably swollen behind the middle and with the striæ much less evanescent posteriorly, being subequal in strength throughout the length; met-episterna more finely and feebly punctate. Length ( $\sigma^7$ ) 8.6 mm.; width 2.6 mm. Labrador (W. St. Modest),—Sherman..... **minuens** n. sp.

Color black, the elytra piceous and scarcely so shining in the female, piceo-rufous beneath, the legs obscure rufous; head well developed, with large and very prominent eyes, the basal constriction narrow and deep; mandibles small; antennæ rather long and slender, black; prothorax a third to nearly half wider than long, the sides evenly rounded, sinuate basally, parallel in basal fourth, the angles sharp, sometimes slightly prominent; margin deeply and subevenly but not broadly reflexed; anterior impression rather deep, very coarsely, diffusely punctate; median stria deep but, unlike the two preceding, only slightly coarser or deeper basally; foveæ large, deep, coarsely punctate, obscurely bistriate, the carina moderate; elytra two-thirds to three-fourths longer than wide, about one-half wider than the prothorax and not obviously swollen behind the middle, gradually evenly rounded behind; striæ distinctly impressed suturally ( $\sigma^7$ ), less so ( $\varphi$ ), distinct though finer to the apex, the punctures strong, less so in the female, the seventh stria very fine in both sexes; third interval with the usual three punctures. Length ( $\sigma^7$   $\varphi$ ) 8.8–9.6 mm.; width 2.9–3.2 mm. Michigan (Marquette),—Sherman. [*Pterostichus tenuis* Lec.]..... **tenuis** Lec.

4—Form subparallel, black, the under surface rufous, darker anteriorly, the legs rufous; head fully three-fourths as wide as the prothorax, the eyes moderately large and prominent; basal constriction coarse, entire, punctate; mandibles small, rounded externally; epistoma transversely tumescent at the middle; antennæ rufo-piceous, half as long as the body; prothorax rather large, two-fifths wider than long, the sides evenly rounded, sinuate posteriorly, becoming parallel in about basal fifth or sixth, finely, subevenly reflexed throughout the length; basal angles right, slightly blunt at tip; base and apex equal in width; anterior impression wholly obsolete, with a few scattered punctures, the apical beading feeble; median stria but slightly coarser and deeper basally; foveæ only moderately deep, punctate, the carina fine and feeble; elytra three-fourths longer than wide, only a fourth wider than the prothorax, not distinctly inflated posteriorly, very gradually rounding at the sides posteriorly; sides less abruptly rounded at the humeri than in the preceding species; striæ very feeble, finely, indistinctly and irregularly punctulate, the seventh almost obsolete, all but the first and eighth obsolete at tip; intervals nearly flat, the third remotely tripunctate; prosternum alone very

coarsely punctate. Length (♂) 8.5 mm.; width 2.8 mm. Labrador (W. St. Modest),—Sherman. . . . . *læviceps* n. sp.  
 Form rather slender, not quite so parallel, shining, rufous, the head and prothorax somewhat darker; legs rufous; head three-fourths as wide as the prothorax, with rather large and moderately prominent eyes; nuchal constriction deep, punctate; anterior sulci very short, feeble and irregular; epistoma with a transverse ridge, feebler and straighter than in the preceding; antennæ much shorter and thicker, rufous, much less than half as long as the body; prothorax a fourth to two-fifths wider than long, the sides broadly, evenly rounded and finely reflexed, becoming parallel in basal fifth or sixth, the angles right and sharp; anterior impression obsolete, with a very few punctures, the apical beading subobsolete medially; median stria only a little coarser but very deep basally; foveæ smaller than usual, rather deep, punctate and distinctly binary, the carina distinct, very close to the edge; elytra three-fourths longer to nearly twice as long as wide, two-fifths wider than the prothorax, very gradually arcuately narrowing behind; striæ fine, slightly impressed suturally, the discal obsolete at apex; punctures very fine and slightly uneven, close-set; outer striæ very feeble; third interval remotely tripunctate. Length (♂ ♀) 8.0–9.0 mm.; width 2.7–3.0 mm. Alaska (St. Paul Island). A large series. . . . . *insularis* n. sp.

The species *labradorinus*, *minuens* and *tenuis* have been united with *septentrionis* Dej., in our collections and lists, but they are apparently not the same; *septentrionis* has been traced from northern Europe to Kamchatka, but probably does not cross the Rocky Mountain divide, the species of eastern North America being almost invariably distinct from the Pacific species—even in comparatively northern latitudes. The multiplicity of species, as shown above, they sometimes being abundantly distinct among themselves, as in the case of *tenuis* and *labradorinus*, tends to prove that all are distinct from *septentrionis*. *Septentrionis* is usually compared with *excavatus* Payk. (*rufipes* Duft.) and was for a long time considered identical, but a specimen of the latter now before me, differs much from the three species mentioned, in its more abbreviated form, evident subapical sinus of the elytra and in having the median stria of the pronotum but little coarser basally, differing in this way from *labradorinus* and *minuens* but resembling *tenuis*; this, however, has a larger head, with very much larger and more prominent eyes. *Rufipes* Lec., may or may not be still another species; I have not been able to view the type, which seems to be larger in size than any of the above—10 mm., according to the record. *Insularis* may be allied to *fulvus* Mann., from Kodiak Island, but there is nothing to

indicate this in the description, from which it may be inferred that the frontal sulci are normally long and deep in *fulvus*, which is besides an evidently larger species—10 mm. in length.

### Platidius Chd.

The uniting of this genus—which seems to be wholly peculiar to the western parts of North America—with *Patrobis*, is inexplicable. Typically it bears no close resemblance to *Patrobis*, differing in the more parallel and subdepressed form of the body, thicker palpi and more developed mandibles, absence of deep pronotal foveæ and in the acutely pointed hind trochanters, which sometimes attain almost the length of the femora in the males; it differs also in the impunctate sterna. As a remarkable peculiarity, it should be stated that a minute nick in the sides of the prothorax just before the basal angles is usually evident and, in *incisus*, this becomes a rather conspicuous character; it seems to be wholly wanting in *Patrobis*, where the hind trochanters are short and obtuse in both sexes. In *Platidius* the eyes are relatively smaller and much less prominent than in *Patrobis*, and the feebly impressed latero-basal part of the pronotum is very finely punctulate or rugulose, contrasting greatly with the coarse punctures of *Patrobis*. Our species are moderately numerous and, so far as known to me, may be described as follows:

- Prothorax nearly as long as wide, subquadrate; size larger as a rule; hind wings well developed . . . . . 2
- Prothorax shorter, transverse and subcordiform; pronotum more sharply punctulate and with the punctures extending from side to side basally; hind trochanters shorter though acutely pointed. . . . . 7
- 2—Latero-basal part of the pronotum broadly, very feebly and subevenly impressed and punctulato-rugulose. . . . . 3
- Latero-basal part similarly sculptured, but with a more definite shallow foveiform impression remote from the side margin, the carina less obsolete than in the preceding section. . . . . 5
- 3—Mandibles smaller, less prominent. Body relatively broader than in the two following, rather dullish, deep black, the legs black; head large, elongate, nearly four-fifths as wide as the prothorax, the sulci long, deep, extending to the middle of the epistoma; eyes moderate, not very prominent; antennæ black, extending well behind the thoracic base and rather thick; prothorax just visibly wider than long, widest just before the middle, where the sides are rounded, thence feebly converging anteriorly and arcuately feebly converging posteriorly, becoming very feebly sinuate, the edge sometimes feebly crenulate, feebly and narrowly reflexed, rapidly more broadly so near the rounded apical angles; base as wide as the sinuato-truncate apex,



very oblique at each side, the angles right and sharp, the nick distinct; impressions very feeble and diffuse, the posterior feebly punctulate medially; median stria deep, biabbreviated, not deeper behind; elytra three-fifths longer than wide, parallel and with nearly straight sides, rounding basally, the margin incurvate at base for a short distance, nearly one-half wider than the prothorax, somewhat obtuse at tip, the sinus very feeble; surface subdeplanate laterally at apex, as usual in the genus; striæ fine, feebly impressed, not definitely punctate, the outer feeble, the ninth midway between the eighth and margin; third tripunctate, the scutellar long as usual; intervals very feebly convex. Male with the anterior tarsi rather stouter and more convex than usual in the genus, the hind trochanters aciculary narrowed and prolonged in apical half and almost as long as the tibiæ, two-fifths as long as the latter and simply pointed in the female. Length ( $\sigma^7$  ♀) 10.5-13.2 mm.; width 4.0-4.7 mm. California (Mendocino and Humboldt Cos.). Six specimens.

**latipennis** n. sp.

• Mandibles notably longer and more prominent in both sexes . . . . . 4

4—Body smaller and more slender than in *latipennis*, similar in color and in the rather dullish lustre; male more notably smaller than the female; head slightly narrower than the prothorax, the eyes more prominent than usual in the genus; sulci long, very broad and deep, slightly converging; antennæ rather long, not so thick as in *latipennis*; prothorax nearly similar throughout but smaller, with the sides usually more distinctly sinuate basally; vestiges of a fine carina more evident; elytra narrower though of nearly similar outline, structure and striation, fully two-thirds longer than wide and nearly one-half wider than the prothorax. Male with the anterior tarsi rather less stout, the hind trochanters three-fourths as long as the tibiæ, gradually finely aciculate in less than apical half. Length ( $\sigma^7$  ♀) 10.0-12.0 mm.; width 3.7-4.0 mm. California (Sonoma and Mendocino Cos.). [*Patr. trochantericus* Lec.] . . . . . **californicus** Mots.

Body nearly as in *californicus* but much larger, more elongate and larger than in *latipennis*, similar in coloration and lustre; head and prothorax larger than in the preceding, the former with less prominent eyes and less constricted and much broader neck; antennæ long, more pallescent distally, the sulci similar; prothorax slightly though evidently wider than long, as in the two preceding in general form and structure, the short carina near the hind angles very feeble and vestigial; minute nick before the hind angles distinct; elytra notably elongate, fully three-fourths longer than wide, less than one-half wider than the prothorax, similar to the two preceding in general outline, striation and structure, the three punctures on the third stria more broadly impressed, equidistant and widely separated as usual; hind trochanters of the male gradually finely aciculate and more or less contorted distally and almost as long as the tibiæ; in the female they are gradually sharply pointed and half as long as the tibiæ; anterior tarsi of the male notably stout basally. Length ( $\sigma^7$  ♀) 13.0-15.0 mm.; width 4.4-4.8 mm. California (south of San Francisco),—Dunn . . . . . **incisus** n. sp.

5—Mandibles long and prominent in both sexes. Body larger than in any other species, rather stout, subparallel, deep black, more shining than usual; head large and elongate, only very slightly contracted at base, the eyes scarcely more prominent than the tumid sides behind them; sulci very coarse; epistoma tumid in anterior half; antennæ black, not very thick, extending behind the thoracic base; prothorax large, only slightly wider than long, widest at the middle, the sides feebly converging thence anteriorly, feebly oblique but not sinuate toward the hind angles, feebly reflexed, the edge finely and abruptly erect and, toward the rounded, anteriorly produced and lobiform apical angles, becoming conspicuously and broadly reflexed; base sinuously very oblique at the sides, the angles scarcely more than right, the nick distinct though shallow; transverse impressions distinct but diffuse, the rather fine deep and even striae abbreviated; inner fovea very large, shallow and diffuse, the outer narrow and short but more sharply defined; elytra oblong, parallel, two-thirds longer than wide, scarcely a third wider than the prothorax, subcircularly rounded at tip; striae not very fine and distinctly impressed, the outer less so though distinct and feebly punctate; intervals convex; anterior tarsi ( $\sigma^7$ ) only slightly dilated, the tibia broadly arcuate, the inner tooth near apex distinct; hind trochanters gradually aciculate, three-fourths as long as the tibiae, the tibia feebly sigmoid. Length ( $\sigma^7$ ) 14.5–15.5 mm.; width 5.2–5.4 mm. Washington State. Two examples. . . . . **strenuus** n. sp.

Mandibles rather short, more rounded externally. . . . . 6

6—Form parallel, slightly convex, deep black, more polished than usual; head fully two-thirds as wide as the prothorax, subquadrate, the neck almost as wide as the distance across the eyes, which are not prominent; sulci long, very broad and deep, parallel; epistoma nearly flat, with a feeble foveiform impression at base; antennæ black, rather stout, extending but slightly behind the thoracic base; prothorax large, barely at all wider than long, equally wide at base and apex as usual in this genus, widest at the middle, the sides very feebly arcuate, nearly straight, subparallel and feebly crenulate anteriorly, barely at all converging and just visibly sinuate posteriorly; base oblique at the sides, the angles slightly blunt, the nick distinct; sides feebly reflexed, the lobiform apical angles rounded and broadly deplanato-reflexed; apex subtruncate; impressions feeble but evident, the striae abbreviated; inner fovea large, shallow and finely scabrous, the outer a fine sharp impressed line, not delimiting a carina; elytra parallel, with straight sides which rapidly round at base, three-fourths longer than wide, not a third wider than the prothorax; striae rather feebly impressed, not fine and very minutely punctulate; intervals nearly flat. Male with the anterior tibiae broadly arcuate, the femora obtusely dentate beneath at the middle, the tarsi feebly dilated; hind tibiae strongly sigmoid, with longer and closer coarse hairs within, except basally, the trochanters gradually finely aciculate and subequal in length to the femora. Length ( $\sigma^7$ ) 12.7–14.0 mm.; width 4.6–4.8 mm. Nevada (Reno). Two specimens.

**rectus** n. sp.

Form less parallel, the anterior parts relatively smaller, body smaller in size, similar in the deep black color, the surface slightly less shining; head not quite so large, though two-thirds as wide as the prothorax, less broad at base, the eyes more convex and distinctly more prominent; sulci very broad and deep, parallel; antennæ nearly similar; prothorax slightly though more evidently wider than long, in general similar to that of *rectus*, though relatively smaller in size and with the apical angles less conspicuously lobed, the sides basally more distinctly sinuate and the inner fovea shallower and less definite, the outer an almost similar short, finely and feebly incised line; elytra similar but narrower, less obtuse at apex and fully two-fifths wider than the prothorax, the striæ finer but more evidently impressed, the outer striæ less obsolete and the punctulation very fine and feeble. Male with the anterior tarsi very moderately inflated, the tibiæ apically more bent, the femora not dentate beneath, posterior tibiæ less sigmoid and with less conspicuous hairs within, the trochanters gradually finely aciculate and four-fifths as long as the femora; in the female they are more rapidly and obtusely pointed and two-fifths as long as the femora. Length (6♂, 8♀) 12.0-13.0 mm.; width 4.1-4.5 mm. California (Mokelumne Hill, Calaveras Co.) and Nevada (Reno)..... *sierranus* n. sp.

Form much more abbreviated and very much smaller in size, similar in color and lustre to the preceding; head nearly four-fifths as wide as the prothorax, with notably convex and prominent eyes, the coarse sulci divided each into two large deep foveæ in the type; antennæ black, rather thicker and distinctly shorter than in either of the preceding, as seen especially in the shorter third joint; nuchal constriction shallow, with minute sparse punctulation; prothorax in nearly all respects as in *sierranus*, except that the inner shallow fovea is more sharply defined and the outer one a deeper and more conspicuous short incised line, and also that the basal margin is slightly beaded toward the sides; elytra similar but very much shorter, not quite one-half longer than wide, one-half wider than the prothorax. Male with the anterior femora very obtusely angulate at the middle beneath, the tibiæ but feebly arcuate distally and the tarsi scarcely at all dilated; posterior tibiæ feebly sigmoid, distinctly pubescent within and with the trochanters rapidly finely aciculate distally and scarcely more than two-thirds as long as the femora. Length (♂) 9.0 mm.; width 3.7 mm. Nevada (Reno). One example.

***breviusculus* n. sp.**

7—Head, exclusive of mandibles, fully as wide as long, the neck very short, the mandibles very small, acute though only feebly inflexed at tip. Body rather narrow, feebly depressed, black in color, the legs black, the trochanters rufous; head three-fourths as wide as the prothorax, the eyes notably prominent, the sulci long, deep, slightly converging, extending beyond the middle of the epistoma; antennæ moderate, rather slender, black; prothorax two-fifths wider than long, widest just before the middle, slightly narrowed thence to the broadly rounded apical angles, oblique and sinuate poste-

T. L. Casey, Mem. Col. VIII, Oct. 1918.



- riorly, becoming subparallel in about basal fifth; base as wide as the distinctly sinuate apex, only feebly oblique laterally; anterior impression distinct, subangulate, the posterior not distinct, very diffuse; foveæ large, shallow, the outer wanting; side margins broadly reflexed; hind angles sharp, the nick obsolete as usual in this section; elytra three-fourths longer than wide, not quite one-half wider than the prothorax, parallel, the sides gradually rounding behind, without sinus, gradually arcuate basally; striæ moderate, deeper apically, distinctly impressed and obsoletely punctulate suturally, the seventh distinct, the ninth very fine, the space between the eighth and margin much narrower than in the preceding section, the ocellate series entire but fine. Male with the anterior femora angulate beneath behind the middle, the tibiæ straight, the tarsi with the first two joints very feebly dilated; posterior trochanters much less than half the femoral length and acutely pointed; last ventral with a single very small apical puncture far to each side; female with two close-set punctures at each side, the hind trochanters more obtuse, scarcely more than a fourth the femoral length. Length (♂ ♀) 10.0–10.5 mm.; width 3.5–3.6 mm. The female the smaller. Colorado (Boulder Co.) . . . . . **breviceps** n. sp.
- Head slightly to distinctly longer than wide, the neck less abbreviated; mandibles more prominent and more incurved at tip . . . . . 8
- 8—Space between the eighth elytral stria and the margin narrower than the eighth interval as in the preceding; frontal sulci extending at least to the middle of the epistoma; antennæ moderately long and slender; elytra narrower, parallel . . . . . 9
- Space between the eighth stria and the sides as wide as the eighth interval, the elytra broader and more oblong-suboval; frontal sulci extending to but not upon the epistoma; antennæ notably longer and more slender . . . . . 10
- 9—Form moderately narrow, subparallel and feebly convex, dark piceous-brown in color, the femora blackish; head nearly three-fourths as wide as the prothorax, the eyes well developed but only moderately prominent; sulci long, coarsely impressed and subparallel; antennæ dark rufous, half as long as the body; prothorax not quite two-fifths wider than long, the sides broadly reflexed, subevenly rounded, becoming subparallel in about basal sixth; base rather wider than the moderately sinuate apex, only slightly oblique laterally, the angles sharply defined, the anterior moderately blunt; impressions distinct, the posterior more obsolete medially in the female; foveæ distinctly impressed, rugulose, the outer evident but feeble, linear; elytra three-fourths to four-fifths longer than wide, a third, or more (♀), wider than the prothorax, the parallel sides rapidly more rounded at the humeri, gradually subcircularly rounded at apex, the sinus wholly wanting; striæ fine but everywhere distinct, not at all less so apically, evidently impressed suturally throughout but barely at all punctulate, the third with the usual three punctures. Male with the anterior femora evenly and feebly arcuate beneath, the tibiæ straight and the tarsi more inflated than in the preceding, though moderately; hind trochanters a third as long as the femora, sharply pointed, the

tibiæ but feebly curved outwardly toward tip and with the inner erect hairs short; hind tarsi very slender and not much shorter than the tibiæ. Length (4♂, 2♀) 9.0-10.3 mm.; width 3.25-3.5 mm. Colorado. Levette collection..... **tenuitarsis** n. sp.

Form elongate, subparallel, rather depressed, shining, deep black, the legs black with rufous trochanters; head elongate, fully two-thirds as wide as the prothorax, the eyes moderate and not very prominent; sulci long and deep; palpi and antennæ black, the latter rather long and slender; prothorax transverse and about one-half wider than long, the sides rounded and well reflexed, sinuate basally and parallel in about basal sixth, the angles more than right but well defined; base feebly oblique laterally, as wide as the distinctly sinuate apex, the apical angles rounded and very obtuse; anterior impression deep and with a few fine punctures, the posterior obsolete; basal punctures numerous and very clearly defined; foveæ shallow, the exterior very short and acutely linear; elytra long, but little less than twice as long as wide, two-fifths wider than the prothorax, gradually ogival apically, without trace of sinus; sides nearly straight, gradually rounding basally; striæ acutely deep and strong throughout, even coarser and deeper at apex, still more impressed suturally, minutely punctulate basally, the seventh entire and rather deep, the eighth not quite attaining the apex; intervals moderately convex. Male with the anterior femora distinctly dentate beneath at basal third, the tibiæ straight, with strong inner subapical tooth, the tarsi only just visibly enlarged basally; hind trochanters slightly less than half the femoral length, sharp, the tarsi slender, black, long though distinctly shorter than the nearly straight tibiæ. Length (♂) 11.0 mm.; width 3.8 mm. Colorado (Red Cliff),—Wickham.

**coloradensis** n. sp.

Form nearly as in the preceding, black, the legs black or piceous, shining, the elytra dullish in the female as usual; head slightly elongate, with moderately prominent eyes and long deep sulci; antennæ rufo-piceous, moderately long and slender; prothorax less transverse and less rounded at the sides than in the preceding, a third wider than long; sides broadly and strongly reflexed, feebly oblique and sinuate basally, becoming not quite parallel toward the very sharp and subprominent angles; base oblique at the sides; apex sinuate, with rounded angles; impressions and biabbreviated stria nearly as in the preceding; inner fovea deep, sublinear, broadly impressed, the outer very short, feebly defined; elytra three-fourths longer than wide, not quite one-half wider than the prothorax, very feebly inflated posteriorly, gradually ogival apically, the sides gradually rounding basally, the sinus completely wanting; striæ fine, acute but not conspicuous, not punctate, the inner equally distinct and barely impressed to the apex, the outer very fine and feeble, not entire, the eighth abbreviated on the broad latero-apical declivity; intervals nearly flat. Length (♀) 11.0 mm.; width 3.8 mm. Colorado. Levette collection..... **reflexus** n. sp.

10—Body more oblong-suboval in form, feebly convex, deep black and very shining; legs black, the coxæ rufous, the abdomen rufescent

apically; head rather elongate, more than three-fourths as wide as the prothorax, with prominent mandibles, extremely broad deep sulci and rather prominent though moderate eyes; antennæ piceous, very slender, much more than half as long as the body; nuchal constriction very feeble and diffuse, with fine punctures; prothorax two-fifths wider than long, widest at the middle, the sides thence feebly converging and nearly straight to the broadly rounded apical angles, broadly and moderately sinuate basally, becoming very gradually parallel in about basal sixth, the angles right and sharply defined; margins reflexed, deeply so only in apical half; apex feebly sinuate, transverse; impressions both evident but feeble and diffuse, both plentifully and sharply punctulate; stria deep, biabbreviated; foveæ broadly and deeply impressed, sublinear, the outer short, linear, feeble and indefinite; elytra three-fourths longer than wide, one-half wider than the prothorax, gradually ogival in nearly apical half, with long and very feeble sinus; sides very gradually a little more arcuate basally; striæ fine but sharp, finely punctulate, evidently impressed, rather deeply so inwardly, entire, the seventh distinct and impressed, the ninth midway between the eighth and margin; intervals feebly convex. Length (♀) 10.5 mm.; width 4.0 mm. California (Redwood Creek, Humboldt Co.):..... **flicornis** n. sp.

The elytra in this genus and *Patrobis* are very much as in *Pterostichina*, resembling them especially in the disposition of the ninth stria, but they differ in having no basal margination and in the rather conspicuous declivo-explanate postero-lateral part of the surface, which is feebly traceable also in *Pogonus*. The five last described species of the table are doubtless allied to the Alaskan *aterrimus* Dej., which I have not seen, and they approach the genus *Patrobis* more closely in general outline, and especially in the more cordiform prothorax, than they do the larger parallel forms with greatly developed male hind trochanters; but that they do not strictly form a bond between the two genera, can be shown by the system of sculpture, form of the pronotal foveæ and sexual modifications of the hind trochanters, which are exactly of the same nature as in the larger species, though less developed; also by the feeble nuchal constriction, more flattened upper surface of the body and general habitus.

The first elytral stria is bent outwardly toward base, ending in the ocellate puncture at the base of the second stria; the long scutellar stria lies between the basal part of the first and the scutellum and basal part of the suture, and is not connected in any way with the ocellate puncture, as is usual with the scutellar stria. I have noticed this same peculiarity in *Trechus*. In *Anophthalmus* there

is no scutellar stria, the first ending at base in a large dilatation, which includes the minute elevated subscutellar tubercle—not a puncture in this case or in *Trechus*. This unusual disposition of the basal part of the first stria and the scutellar stria, is very different from that characterizing the Pterostichinæ, where the scutellar stria lies between the first and second striæ and proceeds directly from the ocellate puncture, but I have noted in some Evarthrids, as an abnormal feature, that the first stria may be deflected at base, becoming coincident with the scutellar stria and ending in the puncture, the true base of the first stria being disconnected and free. By evolution this detached basal part of the first stria, has become the regular scutellar stria in the Pogonid genera, the first regular stria being always and normally deflected outwardly at base to the ocellate puncture.

#### **Trechus Clairv.**

This genus of comparatively minute species—when compared with the preceding genera, together with *Anophthalmus*, differs very greatly from the preceding types in having the hind body narrowly pedunculate and in having the fourth palpal joint slender, aciculate and frequently longer than the third, though in *Anatrechus*, defined below, the maxillary palpi are much thicker than in *Trechus*, approaching the structure seen in *Patrobus*. In *Trechus* the frontal sulci are usually more prolonged and outwardly curvate posteriorly than in *Patrobus*. The elytra are nearly similar in general structure, except that there is at apex a coarse deep arcuate prolongation of the fine fifth stria, which is absent in *Patrobus* and related genera. The legs and trochanters are unmodified as in *Patrobus*, but the general structure of the under surface is similar. There is a single puncture at each side of the abdominal tip in both sexes and the posterior of the three dorsal punctures of the elytra is very near the apex.

*Trechus* and *Anophthalmus* are both enormously developed in the European fauna, but they are comparatively poor in species and rare in individuals in North America. Our very moderate number of *Trechus* species may be known as follows:

Outline more nearly parallel, the hind body oblong-suboval. . . . .	2
Outline strongly ventricose, the hind body more inflated and ovulate. . .	8
2—Eyes rather large and prominent. Pacific coast fauna. . . . .	3

Eyes moderate to small, less prominent. Atlantic coast fauna. . . . . 5

3—Color rufo-piceous, the prothorax paler and more testaceous. Under surface obscure rufous, the legs paler; antennæ long and filiform, piceous; head shorter than wide, three-fourths as wide as the prothorax, the sulci subinterrupted; fourth palpal joint scarcely as long as the third; prothorax short and transverse, fully two-thirds wider than long, subevenly rounded at the sides, the latter finely reflexed, more so near the basal angles as usual, the angles more than right, sharp, minutely subprominent at tip; base evidently wider than the feebly sinuate apex; impressions distinct, the anterior near the margin; stria not coarse but deeply impressed, abbreviated in front; foveæ deep, remote from the sides; elytra one-half longer than wide, a third wider than the prothorax (♂), slightly more (♀), subevenly rounded behind from a little beyond the middle; striæ rather fine, only feebly impressed and with small punctures internally, gradually becoming obsolete externally. Length (♂ ♀) 3.7–4.2 mm.; width 1.35–1.6 mm. British Columbia (Stickney River),—Wickham. Sitka,—Motschulsky. An ample series. . . **californicus** Mots.

Color black to piceous-black, the prothorax not or scarcely at all paler than the elytra, the latter faintly opalescent; legs rufous; body much stouter in form. . . . . 4

4—Body stout, moderately convex; head two-thirds to three-fourths as wide as the prothorax, not quite as long as wide, the sulci very long, entire; last palpal joint somewhat longer than the third; antennæ slender, rather long, piceous, paler at base; prothorax much less transverse than in the preceding, one-half wider than long, the sides and angles subsimilar; base scarcely at all wider than the apex; impressions and foveæ nearly similar; elytra oblong-suboval, not quite one-half longer than wide, two-fifths wider than the prothorax, the arcuate sides moderately reflexed; striæ finely punctate, rather fine, feebly impressed internally, gradually obsolescent externally; dorsal punctures coarse and conspicuous. Length (♂ ♀) 4.3–4.7 mm.; width 1.45–1.75 mm. California (Siskiyou Co.) and Vancouver Island. Unalaska Island,—Dejean. . . . . **chalybeus** Dej.

Body distinctly more abbreviated and broader, deep black above, piceous beneath, the legs bright rufous; head three-fourths as wide as the prothorax, about as long as wide, the sulci subinterrupted; palpi and antennæ bright rufo-testaceous throughout, in structure somewhat as in *chalybeus*; prothorax broader, nearly two-thirds wider than long, the sides subsimilarly rounded and basally feebly oblique and straighter, the apices of the basal angles minutely prominent; impressions and foveæ nearly similar; base much broader than the moderately sinuate apex; elytra notably shorter and broader, with much more rapidly and broadly obtuse apex, parallel, with feebly arcuate sides, a third longer than wide, two-fifths wider than the prothorax; striæ moderate, distinctly though not coarsely punctured, evident throughout the width, gradually more impressed, though not very deeply, toward the suture; three dorsal punctures not so coarse as in *chalybeus*; opalescent lustre scarcely evident. Length



(♀) 4.35 mm.; width 1.7 mm. California (Lake Tahoe). Two examples. . . . . **tahoensis** n. sp.

5—Color testaceous, the head and prothorax more or less infumate; sides of the prothorax more strongly arcuate anteriorly and oblique and straighter for a greater distance thence to the base. Form rather convex, moderately stout, polished; head three-fourths as wide as the prothorax, the eyes slightly more developed and prominent than in the following three species, the sulci long, entire; fourth palpal joint slightly longer than the third; antennæ rufous, as long as the elytra and slightly thickened distally; prothorax not quite one-half wider than long, widest near apical third, the basal angles minutely and feebly subprominent; anterior impression deep, subangulate, the posterior feeble; stria deeply impressed; foveæ deep, at lateral fourth; elytra slightly less than one-half longer than wide, a third wider than the prothorax, nearly one-half (♀), obtusely rounded at apex; striæ inwardly coarse, deep and strongly punctured, feeble though traceable laterally, the dorsal punctures coarse; intervals strongly convex suturally. Length (♂ ♀) 3.7–4.0 mm.; width 1.5–1.6 mm. Minnesota (Duluth) and Wisconsin (Bayfield). [*Trechus fulvus* Lec. (*Epaphius* Lch.)—nom. præocc.]. Eight examples, demonstrating the constancy of coloration. . . . . **palescens** nom. nov.

Color black or piceous-black, the elytra feebly opalescent, the anterior parts not or scarcely paler; sides of the prothorax more evenly arcuate, oblique and nearly straight in about basal half; legs rufous. . . . 6

6—Elytra more elongate, fully two-thirds longer than wide; antennæ notably longer, fully as long as the elytra, very slender, evenly filiform and rufous. Body notably elongate; head two-thirds as wide as the prothorax, the long sulci wholly interrupted medially in the type; eyes moderate, not very prominent; prothorax slightly more than one-half wider than long, the basal angles well reflexed, obtuse, not rounded but not at all prominent at tip; anterior impression fine, linear, the posterior evident; foveæ small, deep, just beyond lateral fourth; elytra two-fifths wider than the prothorax, gradually rounding behind, parallel, with arcuate sides and rather rapidly, evenly rounded humeri; striæ inwardly moderate, rather impressed and not coarsely but strongly punctate, gradually obsolete laterally; intervals evidently convex suturally; dorsal punctures distinct but not coarse, adjoining the third stria as usual. Length (♂) 4.4 mm.; width 1.5 mm. Massachusetts (Fall River),—Frost.

**puritanus** n. sp.

Elytra less elongate, barely one-half longer than wide; antennæ much shorter, not as long as the elytra in either sex. . . . . 7

7—Form moderately stout and convex, shining, blackish-piceous; head nearly three-fourths as wide as the prothorax, somewhat longer than wide, the eyes notably small, slightly prominent; sulci subinterrupted; antennæ very slender, fusco-rufous, slightly compressed distally; prothorax relatively smaller than in the preceding, one-half wider than long to slightly less, the basal angles obtuse, with the tip barely visibly subprominent; base slightly wider than the apex (♂), subequal in the smaller prothorax of the female; anterior im-

- pression notably feeble, the posterior more distinct, the stria rather deep, subentire; foveæ small and narrow, deep, at lateral fourth; elytra two-fifths ( $\sigma^7$ ) to one-half ( $\varphi$ ) wider than the prothorax, parallel, with evenly arcuate sides, subcircularly rounded at apex; striæ moderately coarse, impressed and distinctly punctate inwardly, becoming feeble though easily traceable laterally; dorsal punctures notably coarse. Length ( $\sigma^7 \varphi$ ) 3.8–4.0 mm.; width 1.35–1.45 mm. Rhode Island (Boston Neck)..... **rhodensis** n. sp.
- Form nearly as in the preceding but with distinctly smaller prothorax, the eyes not so small and rather more prominent; head nearly three-fourths as wide as the prothorax, somewhat elongate, rufescent at base and apex, the sulci subinterrupted; antennæ dark rufous, a little longer and thicker than in *rhodensis* and more evidently incrassulate distally, less evidently shorter than the elytra; prothorax one-half wider than long, the basal angles obtuse, sharp but not prominent; anterior impression subobsolete, the posterior distinct; foveæ much larger, relatively shallower and less definitely limited than in the preceding species; elytra not quite one-half longer than wide, almost one-half wider than the prothorax, feebly inflated posteriorly, circularly rounded behind; striæ as in *rhodensis*, the dorsal punctures coarse. Length ( $\sigma^7$ ) 4.2 mm.; width 1.48 mm. Labrador (W. St. Modest),—Sherman..... **brumalis** n. sp.
- 8—Elytra each with the normal three discal punctures..... 9  
Elytra each with but two discal punctures, the median constantly wanting..... 14
- 9—Elytra more nearly of the form prevailing in the preceding group, being oblong-oval. Body piceous-black, moderately convex, shining, the legs rufous; head not longer than wide, fully four-fifths as wide as the prothorax, the eyes moderately large but only slightly prominent; sulci coarse and deep, entire; last palpal joint not as long as the third; antennæ filiform though not very slender, piceous, rufescent basally, distinctly shorter than the elytra; neck rufescent; prothorax two-fifths wider than long, the base and apex subequal in width; basal angles reflexed, obtuse, the tips not prominent; anterior and posterior impressions both distinct, the stria subentire; foveæ deep, slightly outside of lateral fourth; elytra one-half longer than wide, one-half to two-thirds wider than the prothorax, rather obtusely but evenly, subcircularly rounded at apex, the sides somewhat strongly, evenly arcuate; striæ moderate, not clearly punctate, feebly impressed inwardly, gradually obsolete laterally, the dorsal punctures very moderate in size. Length ( $\sigma^7 \varphi$ ) 4.4–4.6 mm.; width 1.7–1.75 mm. Colorado. Levette collection..... **saxatilis** n. sp.
- Elytra more subglobose, less elongate and more convex, the striation much less developed..... 10
- 10—Elytra with the medial puncture slightly behind the middle of the length as usual, the striæ very fine but rather sharply impressed suturally..... 11
- Elytra with the medial puncture before the middle of the length, the striæ usually indefinite, very fine when visible..... 13
- 11—Antennæ notably long, very slender and filiform, fully as long as

the elytra or a little longer. Body extremely ventricose, blackish-piceous with rufous legs, polished; head unusually narrow and elongate, two-thirds as wide as the prothorax, the eyes notably small and scarcely at all prominent; sulci long, deep and entire; antennæ obscure rufous; prothorax relatively very small, a third wider than long, the evenly rounded and well reflexed sides becoming slightly sinuate before the acute, sharp and notably prominent basal angles; base and apex equal in width; anterior impression very fine and linear, the posterior feeble, the foveæ deep, sublinear, at outer fourth; elytra scarcely a third longer than wide, twice as wide as the prothorax, evenly elliptic-oval and very convex; striæ very fine, scarcely at all impressed, not clearly punctulate, gradually almost obsolete laterally; dorsal punctures somewhat coarse; sutural stria gradually coarser and deeper apically. Length ( $\sigma^7$ ) 4.4 mm.; width 2.0 mm. North Carolina (summit of Black Mts.),—Beutenmüller.

*carolina* Schf.

Antennæ not as long as the elytra; hind body much less dilated and not quite so convex; head less narrow and not elongate, the eyes more developed. . . . . 12

12—Form rather stout, shining, dark rufous, the elytra more clouded; legs rufous; head fully three-fourths as wide as the prothorax, the eyes slightly prominent, moderate in size, the sulci long, deep, entire and strongly arcuate; last palpal joint shorter than the preceding; antennæ filiform though not very slender, obscure rufous, but little shorter than the elytra; prothorax nearly one-half wider than long, somewhat wider at base than at apex, the rounded and well reflexed sides becoming briefly but deeply sinuate at the hind angles, which are scarcely more reflexed but acute, very sharp and laterally prominent; anterior impression feeble, the posterior coarser and deeper, both subangular; stria very fine, coarser basally; foveæ rather large, deep though diffuse; elytra two-fifths longer than wide, two-thirds wider than the prothorax, broadly rounded posteriorly, the humeri and sides almost coarcuately rounded; striæ internally rather fine, evidently impressed and finely, obscurely punctulate, gradually obsolescent laterally, the second as well as fifth with an arcuate apical groove; scutellar stria rather long and deep; dorsal punctures moderate. Length ( $\sigma^7$ ) 3.8 mm.; width 1.65 mm. Arizona (locality unrecorded). . . . . *arizonæ* n. sp.

Form nearly similar but smoother, more convex and very much smaller in size—the smallest of the known American species; color piceous-black, the legs rufous; head moderate, two-thirds as wide as the prothorax, fully as long as wide, the eyes small, scarcely prominent; sulci deep, entire; last palpal joint very slender, much shorter and narrower than the third; antennæ short, filiform, piceo-rufous, clearer basally, scarcely four-fifths as long as the elytra, the joints unusually short; prothorax short, three-fifths wider than long, the rounded sides oblique and straighter posteriad, very feebly sinuate at the hind angles, which are right, not very sharp and not prominent; anterior impression fine, feeble, linear, the posterior coarse and deep; foveæ small, deep, slightly beyond lateral fourth; elytra more oblong-

- oval, more obtuse at base and apex, the humeri more rounded than the sides, two-fifths longer than wide and one-half wider than the prothorax; striæ very fine and feeble even suturally and not evidently punctulate, broadly obsolescent laterally, with the scutellar stria extremely short; dorsal punctures rather small. Length ( $\sigma^7$ ) 2.8–3.0 mm.; width 1.2–1.3 mm. North Carolina (Black Mts.),—Beutenmüller. Three examples.....**hydropicus** Horn
- 13—Body rather stout and convex, female the less; integument shining, dark rufous, the elytra more or less clouded; head more than three-fourths as wide as the prothorax, with moderate eyes and long deep entire sulci; last palpal joint shorter than the fourth; antennæ slender, infusate, clearer basally, not quite as long as the elytra; prothorax small, about one-half wider than long, the sides strongly, subevenly reflexed, arcuate anteriorly, oblique and straighter posteriorly, very faintly sinuate near the angles, which are nearly right and not at all prominent, though not rounded; anterior impression subobsolete, the posterior feeble; foveæ small, deep, sublinear, at outer fourth; elytra oval, more obtuse than circular at apex, the humeri rather more rounded than the sides, nearly three-fourths wider than the prothorax; striæ extremely fine and faint, sometimes obliterated as sharply marked lines, wholly obsolete externally, not punctate, the scutellar moderate, the two anterior dorsal punctures moderately strong, more approximate than usual in this genus. Length ( $\sigma^7$  ♀) 3.6–4.1 mm.; width 1.5–1.75 mm. California (Sta. Cruz to Humboldt Co.). Nine specimens. [*T. lævigatus* Lec.—catalogue name.].....**ovipennis** Mots.
- 14—Form narrower than in *ovipennis* but otherwise very similar, testaceous in color and shining; head somewhat longer than wide, scarcely three-fourths as wide as the prothorax, with rather large and moderately prominent eyes and deep entire sulci, which are not much curved outwardly behind; fourth palpal joint longer than the third; antennæ pale, about as long as the elytra in the male, or evidently shorter ( $\sigma^7$  ♀); prothorax nearly as in *ovipennis*, but with broader and more irregularly impressed foveæ, the basal angles similar; elytra very nearly one-half longer than wide, oval, barely two-thirds wider than the prothorax, less obtusely rounded at tip than in *ovipennis*; sides but little more rounding toward the humeri; striæ fine, very faint and vestigial, the sutural rather more visible, the scutellar moderate, fine. Length ( $\sigma^7$  ♀) 3.4–3.8 mm.; width 1.35–1.55 mm. California (Pasadena). Four examples.....**pomonæ** Fall

I am at a loss to know which of our species could have been identified as the European *rubens* Fab., and am inclined to believe that the latter is not established here, though possibly occurring occasionally through fortuitous importation. The species above described as *puritanus* answers best to *rubens* in its notably elongate elytra, but it is black and has unusually long antennæ; as *brumalis* and *rhodensis* are allied black or blackish species, though distinctly dif-

ferent in elytral and antennal structure, it becomes highly probable that no one of the three can be *rubens*. *Micans* of LeConte, from Lake Superior, I have not seen; it probably belongs in the same section as the three just mentioned, but the expressions in regard to the prothorax "utrinque ante medium foveolatus" and to the elytra "maculis utrinque duabus magnis obscuris valde obsoletis" are not applicable to any of them; the former of these expressions is possibly either a mistake or refers to some abnormal condition in the type specimen.

There can be no doubt that *californicus* is distinct from *chalybeus*; it is a smaller and narrower species, as shown by the ample series at hand, besides differing in color as stated by Motschulsky. The species described by LeConte under the preoccupied name *fulvus* is also amply isolated. *Carolina* is the most remarkable of our species in its extremely inflated and convex hind body, narrow head, small eyes, very long filiform antennæ and sharply prominent hind thoracic angles, in which last character it is however approached by *arizonæ*.

#### **Anatrechus** n. gen.

This remarkable genus is founded upon *Trechus barbaræ* of Horn. It differs from *Trechus* in the much larger head, stouter palpi, the last joint being much longer than the third and conoidal, in the obsolete frontal sulci, basally much narrowed prothorax, with the sides of the base very oblique, recalling *Platidius*, and in the obsolete basal foveæ, absence of elytral striation and of the subscutellar puncture or tubercle; also in the lack of any trace of the peculiar arcuate apical fossa in prolongation of the fifth stria distinguishing *Trechus*; it further differs by the presence, along the median line of each elytron, of several coarse setigerous punctures, disposed apparently in two approximate series. On the under surface it differs greatly in the small and very short met-episterna and relatively longer abdomen and the male, instead of having the first two joints of the anterior tarsi strongly dilated, has these tarsi thicker, the first two joints more transverse and less conspicuously dilated when compared with the two following joints. The eyes are well developed and rather prominent, the mentum tooth acutely bidentate and the hind tarsi thick, the basal joint as long as the



next three combined, the latter subequal among themselves and about as long as wide. Hind wings are almost certainly wanting.

The male example in my collection was received from Mrs. Fuchs, and is in all probability the same as that described and figured by Mr. Schaeffer (Bull. Am. Mus., N. Y., XIV, p. 210). Its dimensions are 5.0 by 1.8 mm. It was labeled "Pasadena, Los Angeles Co" as received, and has never, so far as known, been compared directly with the original type of *barbaræ*, taken at Sta. Barbara, by Mr. Fuchs. It agrees very well with the original description of *barbaræ*, however, except in one particular, for it is said in the description that there are the usual dorsal punctures, which would mean two discal and widely separated and one subapical; in the specimen here referred to this is not true, there being about six punctures on each elytron, irregularly disposed in two close-set series.

There are so many homologous characters pervading *Pogonus*, *Patrobus*, *Platidius* and *Trechus*, and some closely related genera, that the course favored by LeConte and Horn, placing them all in a single subfamily Pogoninæ, would seem to me more appropriate than the division into two subfamilies, Pogoninæ and Trechinæ, now advocated in the European lists. In this subfamily Pogoninæ there are several tribal groups. *Pogonus* is very poorly represented in North America by three genera and three species—*Pogonus texanus* Chd., *Pogonistes planatus* Horn (*depressus* || Lec.) and *Diplochætus parallelus* Lec. (*lecontei* Horn). The last two are considered subgenera of *Pogonus* by some systematists, but this is not necessary or advisable, as the three groups differ among themselves very much in habitus, as well as structural characters.